MATERIAL SAFETY DATA SHEET

SRM Supplier: National Institute of Standards and Technology
Standard Reference Materials Program
100 Bureau Drive, Stop 2321
Gaithersburg, Maryland 20899

SRM Number: 2285
MSDS Number: 2285
SRM Name: Arson Test Mixture in Methylene Chloride
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SECTION I. MATERIAL IDENTIFICATION

Material Name: Arson Test Mixture in Methylene Chloride

Description: SRM 2285 is a solution of 15 compounds, including even carbon number aliphatic hydrocarbons from hexane to tetracosane, toluene, *p*-xylene, 2-ethyltoluene, 3-ethyltoluene, and 1,2,4-trimethylbenzene in methylene chloride. A unit of SRM 2285 consists of five 2-mL ampoules, each containing approximately 1.2 mL of solution.

Other Designations: Methylene Chloride; (dichloromethane; methylene dichloride; methane dichloride; methylene bichloride).

Name	Chemical Formula	CAS Registry Number
Methylene Chloride	CH_2C_{12}	75-09-2
Aromatic/Aliphatic Hydrocarbons	Complex Mixture	See Table A[(1)]

DOT Classification: Dichloromethane, UN1593

Manufacturer/Supplier: Not Applicable

SECTION II. HAZARDOUS INGREDIENTS

Hazardous Component	Nominal Concentration (%)	Exposure Limits and Toxicity Data
Methylene Chloride	100	OSHA TWA: 25 ppm
		OSHA TWA: 125 ppm/15 minutes
		ACGIH TWA: 50 ppm
		LD_{LO}: 357mg/kg: oral-human
		TC_{LO}: 500 ppm/8 hour(s), inhalation human

[1] The matrix of this material contains organic compounds known to be hazardous. However, these chemicals do not require individual MSDS information under current regulations as each concentration is between 0.1 to 0.15 mass percent. For the actual concentration of individual compounds, see the corresponding Certificate of Analysis.

Table A - Hazardous Components

Name	Chemical Formula	CAS Registry Number
n-hexane	$CH_3CH_24CH_3$	110-54-3
n-octane	CH_3CH_26CH3	111-65-9
n-decane	CH_3CH_28CH3	124-18-5
n-dodecane	$C_{12}H26$	112-40-3
n-tetradecane	$C_{14}H_{30}$	629-59-4
n-hexadecane	$H_3CCH_214CH_3$	593-45-3
n-octadecane	$CH_3CH_216CH_3$	593-45-3
n-eicosane	$CH_3CH_218CH_3$	112-95-8
n-docosane	$CH_3CH_220CH_3$	629-97-0
n-tetracosane	$CH_3CH_222CH_3$	646-31-1
toluene	$C_6H_5CH_3$	108-88-3
p-xylene	C_8H_{10}	106-42-3
2-ethyltoluene	$CH_3C_6H_4C_2H_5$	611-14-3
3-ethyltoluene	$CH_3C_6H_4C_2H_5$	620-14-4
1,2,4-trimethylbenzene	CH_33CH_3	95-63-6

SECTION III. PHYSICAL/CHEMICAL CHARACTERISTICS

Methylene Chloride	
Appearance and Odor: clear liquid, sweet odor	**Vapor Pressure:** 400 mm/hg @ 24 °C
Molecular Weight: 84.9	**Vapor Density (air =1):** 2.9
Specific Gravity (Water = l): 1.326	**Volatility (%):** 100
Boiling Point: 40 °C	**Water Solubility:** 1.3 % @ 20 °C
Freezing Point: -95 °C	**Solvent Solubility:** alcohols, ether, phenols, aldehydes, ketones, acetic acid, chlorinated solvents, etc.

SECTION IV. FIRE AND EXPLOSION HAZARD DATA

Flash Point: Not Available

Autoignition Temperature: 556 °C

Flammability Limits in Air (Volume %): **UPPER:** 13
LOWER: 23

Fire and Explosion Hazards: This material is a slight fire hazard. Forms flammable vapor-air mixtures above 100 °C.

Extinguishing Media: Use carbon dioxide or regular dry chemical.

Special Fire Procedures: Move container from fire area if it can be done without risk. Fire fighters should use self-contained breathing apparatus (SCBA) and proper eye and skin protection. Avoid inhalation of combustion by-product fumes.

SECTION V. REACTIVITY DATA

Stability: **X** **Stable** _____ **Unstable**

Conditions to Avoid: Avoid contact with incompatibilities. Avoid heat, flames sparks and other sources of ignition. Containers may rupture or explode if exposed to heat.

Incompatibility (Materials to Avoid): This material is incompatible with metals, bases, oxidizing materials, combustible materials.

Hazardous Decomposition or By-products: Thermal decomposition or combustion produces halogenated compounds, oxides of carbon, phosgene.

Hazardous Polymerization: _____ **Will Occur** **X** **Will Not Occur**

SECTION VI. HEALTH HAZARD DATA

Route of Entry: X **Inhalation** X **Skin** X **Ingestion**

Major Health Hazards: This material may cause respiratory tract irritation, skin irritation, eye irritation, blood damage, central nervous system depression, cancer hazard (in humans).

Inhalation: This material may cause irritation to the upper respiratory tract, irregular heartbeat, headache, drowsiness, dizziness, disorientation, loss of coordination, lung congestion, blood disorders.

Ingestion: This material may cause difficulty in breathing, headache, drowsiness, dizziness, pain in extremities, loss of coordination, internal bleeding, blood disorders, kidney damage, liver damage, convulsions, unconsciousness.

Skin contact: This material may cause irritation with redness and pain.

Eye contact: This material may cause irritation (possibly severe), absorption may occur, tingling sensation.

Chronic Exposure: Not Available

Medical Conditions Generally Aggravated by Exposure: blood system disorders, heart or cardiovascular disorders, kidney disorders, liver disorders, skin disorders and allergies

Listed as a Carcinogen/Potential Carcinogen:

	Yes	No
In the National Toxicology Program (NTP) Report on Carcinogens	X	
In the International Agency for Research on Cancer (IARC) Monographs	X	
By the Occupational Safety and Health Administration (OSHA)	X	

EMERGENCY AND FIRST AID PROCEDURES:

Skin Contact: Wash skin with plenty of soap and water for at least 15 minutes while removing contaminated shoes and clothing. Obtain medical attention if needed.

Eye Contact: Immediately flush eyes, including under the eyelids, with copious amounts of water for at least 15 minutes. Obtain immediate medical assistance.

Inhalation: If inhaled, remove the victim to fresh air. If breathing is difficult, give oxygen; if victim is not breathing, give artificial respiration by qualified personnel. Obtain immediate medical assistance.

Ingestion: Contact local poison control center or physician immediately. **DO NOT** induce vomiting. Never make an unconscious person vomit or drink fluids. If spontaneous vomiting occurs, lower head to knee level to help prevent aspiration. If person is unconscious, turn head to side.

TARGET ORGAN(S) OF ATTACK: Respiratory tract irritation, skin irritation, eye irritation, blood damage, central nervous system depression, cancer hazard (in humans).

One study indicated that chronic exposure may be associated with an increased risk of spontaneous abortion. May cross placenta. May be excreted in breast milk.

SECTION VII. PRECAUTIONS FOR SAFE HANDLING AND USE

Steps to be Taken in Case Material Is Released or Spilled: Notify safety personnel of major spills. Avoid heat, flames, sparks and other sources of ignition. For small spills, absorb with sand or other noncombustible material. Collect spilled material in appropriate container for disposal.

Waste Disposal: Follow all federal, state, and local laws governing disposal.

Handling and Storage: Store in the dark at temperatures lower than 30 °C. Protect from physical damage. Keep separated from incompatible substances. Handle in accordance with all current regulations and standards. Local exhaust ventilation is preferred since it prevents contaminant dispersing into the work area by controlling it at its source. Avoid breathing vapors and direct contact with this material. Eyewash stations and safety showers should be readily available to areas of handling and use. Wear appropriate chemical resistant gloves. Wear splash resistant safety goggles.

SECTION VIII. SOURCE DATA/OTHER COMMENTS

Sources: MDL Information Systems, Inc., MSDS *Methylene Chloride*, 19 March 2003.

Disclaimer: Physical and chemical data contained in this MSDS are provided only for use in assessing the hazardous nature of the material. The MSDS was prepared carefully, using current references; however, NIST does not certify the data on the MSDS. The certified values for this material are given in the NIST Certificate of Analysis.